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THERMO-MECHANICAL AND THERMAL BEHAVIOR OF
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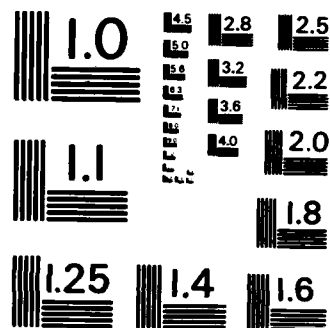
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THERMO-MECHANICAL AND THERMAL
BEHAVIOR OF HIGH-TEMPERATURE STRUCTURAL MATERIALS

Summary Final Report to
Office of Naval Research
NR 032588
Contract No.: N00014-78-C-0431

April 1, 1978 - December 31, 1984

by

D. P. H. Hasselman
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061



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and

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SUMMARY

A seven-year study was conducted of the thermo-mechanical and thermal behavior of high-temperature structural materials, described in detail in earlier technical interim and end-of-the-fiscal-year letter reports, listed in the following pages. *See bibliography.*

This research project has resulted in a total of ~~eighty-five (85)~~ ⁵⁵ technical publications in the engineering and scientific literature involving a total of fifty-three (53) different co-authors. *Keywords:*

high-temperature materials; thermal stresses; thermal conductivity; thermal diffusion

Listing of Interim Technical Reports Submitted to Office
of Naval Research.

1. D. P. H. Hasselman and Co-Workers, "Thermo-Mechanical and Thermal Behavior of High-Temperature Structural Materials," April 1 - Dec. 31, 1978.
2. D. P. H. Hasselman and Co-Workers, "Thermo-Mechanical and Thermal Behavior of High-Temperature Structural Materials," Jan. 1 - Dec. 31, 1979.
3. D. P. H. Hasselman and Co-Workers, "Thermo-Mechanical and Thermal Behavior of High-Temperature Structural Materials," Jan. 1 - Dec. 31, 1980.
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Listing of End-of-the-Fiscal Year Letter Reports Submitted
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The following studies were initiated during the period of the current contract and are being completed with financial support obtained or to be obtained from other sources.

78. D. P. H. Hasselman, L. F. Johnson, R. Syed, M. P. Taylor, K. Chyung, "Heat Conduction Characteristics of Carbon-Fiber-Reinforced Lithium-Alumina-Silicate Glass-Ceramic," to be submitted to J. Mat. Sc.
79. D. P. H. Hasselman, Hong Lim Lee, L. F. Johnson, L. D. Bentsen, R. Syed, "Thermal Diffusivity and Conductivity of Dense Polycrystalline Zirconia Ceramics; A Survey," to be submitted to J. Amer. Ceram. Soc.
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82. D. P. H. Hasselman, L. F. Johnson, "Effective Thermal Conductivity of Composites with Interfacial Thermal Barrier Resistance," to be submitted to J. of Composite Materials.
83. H. Tawil, L. D. Bentsen, D. P. H. Hasselman, "Thermal Diffusivity and Conductivity of an Alumina Fiber-Reinforced Silica," to be submitted to J. Mat. Sc.
84. T. D. Nguyen, J. R. Thomas, Jr. and D. P. H. Hasselman, "Recession Rate of Refractory Structures Due to Successive Thermal Fracture," Journal to be selected.
85. J. R. Thomas, Jr. and D. P. H. Hasselman, "Thermal Stresses in Plate Symmetrically and Asymmetrically Heated by Conductive Heat Transfer."

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